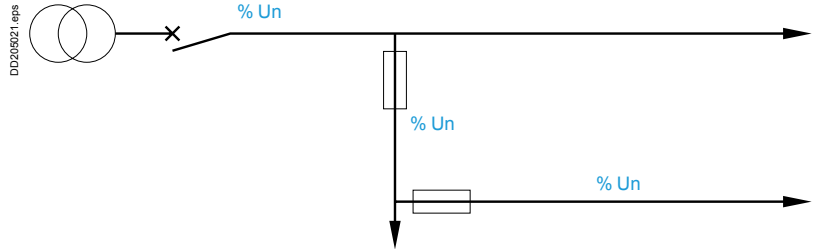


# Simplified design guide for lighting distribution

## Check on voltage drop

### Recommended design procedure

- Assign each circuit with a voltage-drop value expressed as a % of the rated voltage ( $U_n$ ), given that the voltage drop between the head of the circuit and any point must not exceed the values in the table below.



Type of installation	Voltage drop (for lighting)
Installations supplied directly from a public low-voltage distribution network	3 %
Installations supplied by a subscriber substation or a transformer substation from a high-voltage installation <sup>(1)</sup>	6 %

*(1) Wherever possible, voltage drops in final lighting circuits must not exceed 3 %. When the main busbar trunking in the installation is longer than 100 metres, the permissible values may be increased 0.005 % per metre of trunking over 100 metres, on the condition that the total addition not exceed 0.5 %.*

- Convert into volts the % of the rated voltage ( $U_n$ ) assigned to each circuit.
- Using the tables, check that the trunking and/or cables selected in the previous pages are compatible with the calculated voltage drops. Otherwise, it is necessary to increase the size of the cables.

### Remarks

- In a mixed circuit, the most economical option is to increase the size of cables and avoid the use of prefabricated trunking with a higher rated current ( $I_{nc}$ ).
- For certain loads, it may be necessary to take into account transient voltage drops.

### Voltage drop in the Canalis busbar trunking

The table below indicates the three-phase voltage drop, in volts, in the Canalis busbar trunking (electrical power uniformly distributed). The single-phase voltage drop is obtained by dividing the three-phase voltage drop indicated below by 0.866. If the exact operational current (Ib) and length are not available, select the next highest.

Type of Canalis	Operational current (A)	Length of line (m)															
		6	8	10	12	15	20	25	30	35	40	45	50	60	70	80	100
20 A KDP cos 0.8	10	0.3	0.5	0.6	0.7	0.9	1.2	1.5	1.7	2	2.3	2.6	2.9	3.5	4.1	4.6	5.8
	16	0.6	0.7	0.9	1.1	1.4	1.9	2.3	2.8	3.2	3.7	4.2	4.6	5.6	6.5	7.4	9.3
	20	0.7	0.9	1.2	1.4	1.7	2.3	2.9	3.5	4.1	4.6	5.2	5.8	7	8.1	9.3	11.6
20 A KDP cos 0.9	10	0.4	0.5	0.7	0.8	1	1.3	1.6	2	2.3	2.6	2.9	3.3	3.9	4.6	5.2	6.5
	16	0.6	0.8	1	1.2	1.6	2.1	2.6	3.1	3.6	4.2	4.7	5.2	6.2	7.3	8.3	10.4
	20	0.8	1	1.3	1.6	2	2.6	3.3	3.9	4.6	5.2	5.9	6.5	7.8	9.1	10.4	13
20 A KDP cos 1	10	0.4	0.6	0.7	0.9	1.1	1.4	1.8	2.2	2.5	2.9	3.2	3.6	4.3	5	5.8	7.2
	16	0.7	0.9	1.2	1.4	1.7	2.3	2.9	3.5	4	4.6	5.2	5.8	6.9	8.1	9.2	11.5
	20	0.9	1.2	1.4	1.7	2.2	2.9	3.6	4.3	5	5.8	6.5	7.2	8.6	10.1	11.5	14.4
25 A KBA	10	0.4	0.5	0.6	0.7	0.9	1.2	1.5	1.8	2.1	2.4	2.8	3.1	3.7	4.3	4.9	6.1
25 A KBB cos 0.8	16	0.6	0.8	1	1.2	1.5	2	2.4	2.9	3.4	3.9	4.4	4.9	5.9	6.8	7.8	9.8
	20	0.7	1	1.3	1.5	1.8	2.4	3.1	3.7	4.3	4.9	5.5	6.1	7.3	8.6	9.8	12.2
	25	0.9	1.2	1.5	1.8	2.3	3.1	3.8	4.6	5.3	6.1	6.9	7.6	9.2	10.7	12.2	15.3
25 A KBA	10	0.4	0.5	0.7	0.8	1	1.3	1.7	2	2.3	2.7	3	3.4	4	4.7	5.4	6.7
25 A KBB cos 0.9	16	0.6	0.9	1.1	1.3	1.6	2.1	2.7	3.2	3.8	4.3	4.8	5.4	6.4	7.5	8.6	10.7
	20	0.8	1.1	1.3	1.6	2	2.7	3.4	4	4.7	5.4	6	6.7	8	9.4	10.7	13.4
	25	1	1.3	1.7	2	2.5	3.4	4.2	5	5.9	6.7	7.5	8.4	10.1	11.7	13.4	16.8
25 A KBA	10	0.4	0.6	0.7	0.9	1.1	1.4	1.8	2.2	2.5	2.9	3.2	3.6	4.3	5	5.8	7.2
25 A KBB cos 1	16	0.7	0.9	1.2	1.4	1.7	2.3	2.9	3.5	4	4.6	5.2	5.8	6.9	8.1	9.2	11.5
	20	0.9	1.2	1.4	1.7	2.2	2.9	3.6	4.3	5	5.8	6.5	7.2	8.6	10.1	11.5	14.4
	25	1.1	1.4	1.8	2.2	2.7	3.6	5.4	6.3	7.2	8.1	9	10.1	11.8	12.6	14.4	18
40 A KBA	16	0.2	0.3	0.4	0.5	0.6	0.8	1	1.2	1.4	1.6	1.8	2	2.4	2.8	3.2	4
40 A KBB cos 0.8	20	0.3	0.4	0.5	0.6	0.7	1	1.2	1.5	1.7	2	2.2	2.5	3	3.5	4	5
	25	0.4	0.5	0.6	0.7	0.9	1.2	1.6	1.9	2.2	2.5	2.8	3.1	3.7	4.4	5	6.2
	32	0.5	0.6	0.8	1	1.2	1.6	2	2.4	2.8	3.2	3.6	4	4.8	5.6	6.4	8
40	0.6	0.8	1	1.2	1.5	2	2.5	3	3.5	4	4.5	5	6	7	8	10	
40 A KBA	16	0.3	0.4	0.4	0.5	0.7	0.9	1.1	1.3	1.6	1.8	2	2.2	2.7	3.1	3.6	4.5
40 A KBB cos 0.9	20	0.3	0.4	0.6	0.7	0.8	1.1	1.4	1.7	2	2.2	2.5	2.8	3.4	3.9	4.5	5.6
	25	0.4	0.6	0.7	0.8	1.1	1.4	1.8	2.1	2.5	2.8	3.2	3.5	4.2	4.9	5.6	7
	32	0.5	0.7	0.9	1.1	1.3	1.8	2.2	2.7	3.1	3.6	4	4.5	5.4	6.3	7.2	9
40	0.7	0.9	1.1	1.3	1.7	2.2	2.8	3.4	3.9	4.5	5	5.6	6.7	7.8	9	11.2	
40 A KBA	16	0.3	0.4	0.5	0.6	0.7	1	1.2	1.4	1.7	1.9	2.2	2.4	2.9	3.4	3.8	4.8
40 A KBB cos 1	20	0.4	0.5	0.6	0.7	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3	3.6	4.2	4.8	6
	25	0.5	0.6	0.8	0.9	1.1	1.5	1.9	2.3	2.6	3	3.4	3.8	4.5	5.3	6	7.5
	32	0.6	0.8	1	1.2	1.4	1.9	2.4	2.9	3.4	3.8	4.3	4.8	5.8	6.7	7.7	9.6
40	0.7	1	1.2	1.4	1.8	2.4	3	3.6	4.2	4.8	5.4	6	7.2	8.4	9.6	12	

### Voltage-drop conversion

Operational voltage (V)	Voltage drop in volts for a given %															
	0.3	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	6	7	8	9	10
230	0.7	1.2	2.3	3.5	4.6	5.8	6.9	8.1	9.2	10	12	14	16	18	21	23
400	1.2	2	4	6	8	10	12	14	16	18	20	24	28	32	36	40